

Work Order ID 144467

144467

Page 1

April 19, 2016 9:20:12 AM

Item ID: D350-748-203

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 4/19/2016 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 5/6/2016 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: SA Date: 20160419 Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D350-748-243	A

MAY 27 2016

DCS
6
9-89

100

Document Control

0.00

100

DC

DOCUMENT CONTROL

Memo

0.00

Doc.Control -USB or Paperwork

Photocopy bluefile & type labels per PPPD350-748-201 [CHG001

DAS
27
9-89

JUN 01 2016

110

0.00

110

CNC Bend 2

BENDING MACHINE - CROSSTUBES

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D350-748-243 using CNC bender program D350A and Folio FT

*****UNDER BEND .225" PER SIDE*****

****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****

16-04-19

D350-748-203/144467

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation			Disposition		
			Completed By		
			Lead hand / Supervisor Approval Verification		
			QC / QA Coordinator Approval		
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐			FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐		
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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
127	QC15- Crosstube Dimensional Check	0.00							
127									
QC	Memo	0.00							
Quality Control	***MARK CUT LINES***								
128		0.00							
128									
Crosstubes	Memo	0.00							
Crosstubes	CUT TUBE AT HEIGHT ON FAI SHEET								
	VERF HEIGHT <u>31.35</u> BY QC 15 LEVEL INSPECTOR								
	VERF TWIST <u>173</u> BY QC15 LEVEL INSPECTOR								

DAS
03
9-89

16-4-21

DAS
47
8-89
DAS
47
9-89

16/04/21

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Description Work Order Deviation				Disposition				Completed By	
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Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
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Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
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LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : ☐							
Misidentified ☐	Past Due ☐								

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130		0.00							
130	Crosstubes								
Crosstubes	Memo	0.00							
Crosstubes	2- Drill Tube as per Dwg D350-748-243 Using DT8876 Drill Jigs, Set-up drill table as per QSI 010								
	3 -Deburr								
	4- Engrave Part # and Batch # as per Dwg D350-748-243								
	5-Remove all marks from tube within limits of D350-748-243								
140	QC5- Inspect part completeness to step on W/O	0.00							
140									
QC	Memo	0.00							
Quality Control									

DAS
38
9-89
MAY 06 2016

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Work Order ID 144467

April 19, 2016 9:20:13 AM

144467

Page 5

Item ID: D350-748-203

Accept

N900040100

Setup

Start

NS1

Revision ID:

Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Stop

NS2

Start Date: 4/19/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/6/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run

Start

NR1

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

180

0.00

180

SprayPaint

0.00

SprayPaint

Memo

VERIFY BY DAS BATCH # TO MATCH W/O41VERIFY BY 9.89 PART # TO MATCH
W/O _____

MASK SCRIBE B# & P# AND VERIFY

1. Apply Axalta 13205S Cleaner inside and outside crosstube per QSI 005 4.1.4

BATCH: 132520

2. Axalta 230S Metalok inside and outside crosstube per QSI 005 4.1.4

BATCH: 132474

3. Prime inside and outside crosstube per QSI 005 4.2

BATCH: 134454

4. Paint outside of crosstube per QSI 005 4.2

BATCH: 134585DAS
419-89
16-5-20

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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Description Work Order Deviation		Disposition		Completed By																	
				Lead hand / Supervisor Approval Verification																	
				QC / QA Coordinator Approval																	
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OTHER : ☐																					

Work Order ID 144467

April 19, 2016 9:20:13 AM

144467

Page 6

Item ID: D350-748-203

Accept

N900040100

Setup Start

NS1

Revision ID:

Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Stop

NS2

Start Date: 4/19/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/6/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

NR1

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190	QC14- Inspect Spray Paint	0.00							
190									DAS 38
QC	Memo	0.00							
Quality Control	Then, Wrap in plastic bag to protect from scratches								MAY 27 2016

***VERIFY BY 38 BATCH # TO MATCH W/O
3144467
***VERIFY BY 38 PART # TO MATCH
W/O 3144467

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
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Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

April 19, 2016 9:20:13 AM

Page 7

Accept

N900040100

Setup Start *NS1*

Revision ID:

Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Stop *NS2*

Start Date: 4/19/2016 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 5/6/2016 **Req'd Qty:** 1.00 ***1***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/
Work Center ID

Operation Description

Set Up/ Run Hours

Tool ID	Tool #	Plan Code
---------	--------	-----------

Accept Qty	Reject Qty	Reject Number	Insp. Stamp

200

0.00

200

Crosstubes

0.00

Crosstubes

Memo

Crosstubes

INSTALL GROUND WIRE INSERT, THEN INSERT SCREW AND WASHER

*****LIMIT AIR PRESSURE TO 50 PSI WHEN INSTALLING AETC-1032
INSERT AND ONLY EXPAND INSERT ONCE*****

1-Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg

2-Install supports with Proseal 890 per D350-748-243 and QSI 015

A/R Proseal 890 Batch: 134500
EXP: 11/16

3-Install supports clamps Using Dt8876 as per Dwg D350-748-243,Torque to 60-80 IN-LBS.

PROSEAL CURE TIME 72 HOURS:

Start: 16-5-24
Finish: 16.5.27

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

April 19, 2016 9:20:13 AM

Page 8

Accept

Setup Start *NS1*

Revision ID:

Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Stop *NS2*

Start Date: 4/19/2016 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 5/6/2016 **Req'd Qty:** 1.00 ***1***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/
Work Center ID

Operation Description

Set Up/ Run Hours

Tool ID	Tool #	Plan Code
---------	--------	-----------

**Accept
Qty**

Reject
Qty

Reject Number

Insp.
Stamp

210

QC5- Inspect part completeness to step on W/O

0.00

210

0.00

QC

Memo

***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED
FOR 72HOURS AS PER DWG.***

***VERIFY BY 38 DAS BATCH # TO MATCH W/O

***VERIFY BY 30 PART # TO MATCH

W/O B144469 ⁸⁸

220

Pick Kit

0.00

220

Packaging

Memo

0.00

Packaging

DAS

DAS

6
9-89

28
9-89

MAY 27 1974

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td style="border: none;"></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																						
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Date :		Step #:		QTY Effective :			MRB (QSI042) Approval																		
Description Work Order Deviation				Disposition				Completed By																	
								Lead hand / Supervisor Approval Verification																	
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Root Cause		FAULT CATEGORY																							
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OTHER : ☐																									

Work Order ID 144467

April 19, 2016 9:20:13 AM

144467

Page 9

Item ID: D350-748-203

Accept

N900040100Setup Start ***NS1***

Revision ID:

Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Stop ***NS2***Start Date: 4/19/2016 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 5/6/2016 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	QC4- 100% Inspect kits for completeness	0.00							
230						DAS 27 9-89			
QC	Memo	0.00							
Quality Control	***VERIFY BY <u>DAS</u> <u>27</u> <u>9-89</u> BATCH # TO MATCH W/O JUN 01 2016 ***VERIFY BY <u>DAS</u> <u>27</u> <u>9-89</u> PART # TO MATCH W/O <u>DAS</u> <u>27</u> <u>9-89</u> JUN 01 2016								JUN 01 2016
240		0.00							
240	Packaging								
Packaging	Memo	0.00				DAS 27 9-89			
Packaging	Identify and pack for shipping as per PPPD350-748-203 Location: _____ PPP Rev: <u>fg035</u>								JUN 01 2016
250	QC21- Final Inspection - Work Order Release	0.00							
250									
QC	Memo	0.00							
Quality Control									BGM 6.06.07 / <u>[Signature]</u>

MS JUN 06 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																															
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OTHER :																																																																							

Picklist Print

April 19, 2016 9:20:16 AM

Page 1

Work Order ID: 144467

144467

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 4/19/2016

Required Date: 5/6/2016

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 15.03.23 NEW ISSUE DD VERF;JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D350-748-243TRN

Manufactured

No

Each

4.0000

1

D350-748-243TRN

Crosstube Installation, High Aft

BL 16/04/17

Location

Loc Qty

Loc Code

LG003

4

143641

1

143642

1

143643

1

143644

1

D3502-1

Manufactured

No

Each

14.0000

2

D3502-1

Support

DAS
41
9-89

16-5-25

Location

Loc Qty

Loc Code

LG052

14

139015

14

D5123-7

Manufactured

No

Each

58.0000

2

D5123-7

Clamp Cushion

DAS
41
9-89

16-5-25

Location

Loc Qty

Loc Code

LG052

22

136671

2

137766

20

LG054

36

139042

36

Picklist Print

April 19, 2016 9:20:17 AM

Page 2

Work Order ID: 144467

144467

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 4/19/2016

Required Date: 5/6/2016

Start Qty: 1.00

Required Qty: 1.00

AETC-1032

Purchased

No

Each

30.0000

1

DAS

41

9-89

16-5-24

AETC-1032

Insert

**

Location

Loc Qty

Loc Code

LG050

28

m133732

28

ST547

2

m133002

2

Each

714.0000

1

DAS

41

9-89

16-5-24

NAS1149C0363R

Purchased

No

NAS1149C0363R

Washer

**

Location

Loc Qty

Loc Code

FP001

301

114742

6

m133077

295

GA

410

m133077

410

ST266

3

m133077

3

Each

112.0000

2

DAS

41

9-89

16-5-25

MS21920-20

Purchased

No

MS21920-20

Clamp

**

Location

Loc Qty

Loc Code

FG

2

122254

2

LG050

58

m133483

10

m133932

48

LG056

52

m128650

1

m132675

1

m134055

50

April 19, 2016 9:20:17 AM

Shop Packet Print

Page 2

Picklist Print

April 19, 2016 9:20:17 AM

Page 3

Work Order ID: 144467

144467

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 4/19/2016

Required Date: 5/6/2016

Start Qty: 1.00

Required Qty: 1.00

MS51958-63

Purchased

No

Each

7.0000

1

DAS

41

9-89

16-5-24

MS51958-63

Screw

**

Location

Loc Qty

Loc Code

ST267

7

m131886

7

NAS1149D0563J

Purchased

No

220

Each

1,511.000

8

8

NAS1149D0563.J

Washer

**

Location

Loc Qty

Loc Code

GA

281

m125807

2

m133769

279

ST260a

1000

m134497

1000

ST263

131

m134257

131

ST269

99

m128257

99

DAS
27
9-89

DAS
6 28
9-89

MAY 30 2016

Picklist Print

April 19, 2016 9:20:17 AM

Page 4

Work Order ID: 144467

144467

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 4/19/2016

Required Date: 5/6/2016

Start Qty: 1.00

Required Qty: 1.00

MS21042L4

Purchased No

220

Each

2,308.000

24

24

MS21042L 4

Locknut

**

134676

DAS
6
9-89
DAS
28
9-89

Location

Loc Qty

Loc Code

GA	324	
m133769	324	
OVER007	1500	
m134509	500	
m134606	1000	
ST303	387	
m134055	1	
m134502	386	
ST305	97	
m130922	97	

DAS
27
9-89

MS21042L5

Purchased No

220

Each

512.0000

4

4

MS21042L 5

Nut

**

134676

DAS
6
9-89
DAS
28
9-89

Location

Loc Qty

Loc Code

GA	128	
m127813	128	
OVER007	100	
m134509	100	
ST303	284	
m134055	34	
m134567	250	

DAS
27
9-89

MAY 30 2016

April 19, 2016 9:20:17 AM

Shop Packet Print

Page 4

Picklist Print

April 19, 2016 9:20:17 AM

Page 5

Work Order ID: 144467

144467

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 4/19/2016

Required Date: 5/6/2016

Start Qty: 1.00

Required Qty: 1.00

AN4-41A

Purchased

No

220

Each

199.0000

8

8

AN4-41A

Bolt

DAS

28

9-89

MAY 30 2016

DAS
27
9-89

Location

Loc Qty

Loc Code

over003

120

m133769

120

ST312A

8

m130716

0

m130726

8

ST342

71

m130716

4

m132189

16

m133483

51

D3501-1

Manufactured

No

220

Each

72.0000

16

16

D3501-1

Bushing

145089

DAS

28

DAS 9-89

6
9-89

DAS
27
9-89

Location

Loc Qty

Loc Code

ST039

72

142478

72

Picklist Print

April 19, 2016 9:20:17 AM

Page 6

Work Order ID: 144467

144467

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 4/19/2016

Required Date: 5/6/2016

Start Qty: 1.00

Required Qty: 1.00

NAS1149D0463J

Purchased

No

220

Each

3,244.000

32

32

NAS1149D0463.J

WASHER

**

134634

DAS
28
9-89
6
9-89

Location

Loc Qty

Loc Code

GA	419
M129390	41
M132035	21
M134508	357
ST260a	1796
M134508	600
M134573	1196
ST263	41
M134039	41
ST269	988
M132317	100
M132677	888

DAS
27
9-89

AN5-32A

Purchased

No

220

Each

181.0000

4

4

AN5-32A

Bolt

**

DAS
28
9-89
6
9-89

Location

Loc Qty

Loc Code

over004	60
m133988	60
ST336	114
m132536	2
m133323	4
m133769	108
ST337	7
m131139	7

DAS
27
9-89

D3500-1

Manufactured

No

220

Each

0.0000

4

4

D3500-1

Saddle

**

144786

DAS
28
9-89
6
9-89

DAS

April 19, 2016 9:20:17 AM

Shop Packet Print

MAY 30 2016

Page 6

Picklist Print

April 19, 2016 9:20:17 AM

Page 7

Work Order ID: 144467

144467

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 4/19/2016

Required Date: 5/6/2016

Start Qty: 1.00

Required Qty: 1.00

AN4-6A Purchased No 220 Each 502.0000 16 16

AN4-6A

BOLT

DAS
6
9-89

DAS
28
9-89

MAY 30 2016

Location

Loc Qty

Loc Code

over003

200

M134508

200

ST345

302

M130851

39

M133790

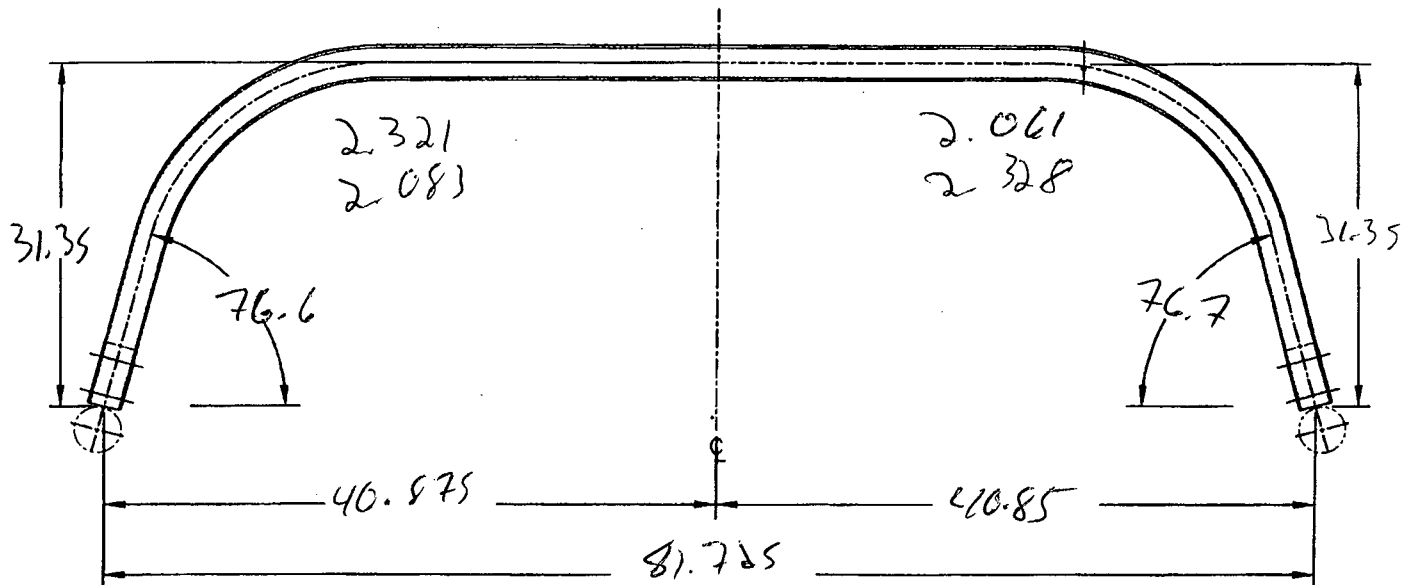
263

16

DAS
27
9-89

DART AEROSPACE LTD		Work Order:	144467
Description: Crosstube High Aft, SS (AS350/355)		Part Number:	D350-748-203
Inspection Dwg: D350-748-243 Rev: A		Page 1 of 1	

Required Dimension	Min	Max
Height	31.10	31.60
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.54	82.06
Bending Passes	7	--
Crushing	--	8%
Twist	--	0.38



	Side A	Side B
Bending Passes	30	33
Crushing	5.4%	6.1%
Comments		

QC15 Inspection	16-4-21
Date	

Rev	Date	Change	Revised by	Approved
A	15.09.09	New Issue	KJ	

Item	Qty	Part Number	Description
	-243		
1	X	D350-748-243	CROSSTUBE ASSEMBLY (AS 350/355 HI AFT)
2	1	D6021-125	CROSSTUBE
3	2	D3502-1	SUPPORT
4	2	D5123-7	CLAMP CUSHION
5	1	AETC-1032	INSERT
6	2	MS21920-20 OR MS21920-21/-22	CLAMP (PER DART SPEC. M-MS21920-20/-21/-22)
7	1	NAS1149C0363R	WASHER (OR AN960C10)
8	1	NAS1635-3-8	SCREW (OR MS51958-63)
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6021-125
FINISHED LENGTH AFTER TURNING = 124.70±0.06 (AFTER BENDING/TRIMMING = 122.70 REF)
- FINISH: PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- TOLERANCE: PER DART QSI 018 UNLESS OTHERWISE NOTED.
WALL THICKNESS ECCENTRICITY PER DART QSI 038 7.2
MIN. ALLOWABLE WALL IS -0.020 FROM NOMINAL
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: DART PART NUMBER "D350-748-243" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- WEIGHT: 29.85 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.290 HOLE.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.

TURNING

- BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.

BENDING

- BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES PER SIDE. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D. ON TOP HALF OF BEND, AND 8% ON BOTTOM HALF OF BEND.
- MAX AMPLITUDE OF RIPPING ALONG BENT PORTION OF THE TUBE IS 0.030 (ZN A1-3)
- MAX TWIST: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.38 (ZN C1-3).

ASSEMBLY

- TO INSTALL D3502-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.02" TO 0.05" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- TORQUE CLAMPS 60 TO 80 IN.-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

DEO ATTACHED

RELEASED

20160419

2015 MAR 18

144467

RELEASED

UNDER REVIEW

2015 MAR 18

15/4/15
REF 15/4/15

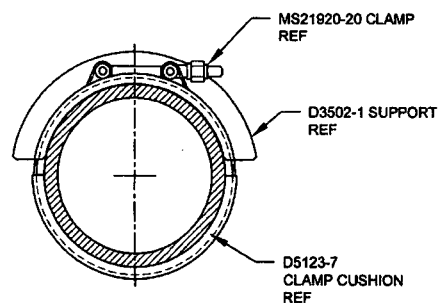
2015 MAR 18
ECN 15/547

A	NEW ISSUE	CP	15.01.21
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED	A.P.		
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	15.01.21		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D350-748-243	REV. A SHEET 1 OF 4
TITLE CROSSTUBE (AS 350/355 HI AFT)	SCALE NTS

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**D350-748-243
ASSEMBLY DETAIL**



SECTION A-A D4-2
SCALE 6X

INSTALL THIS SIDE ONLY, AFTER FINISH:
AETC-1032 INSERT
NAS1149C0363R WASHER
NAS1635-3-8 SCREW

14 15
D3502-1 SUPPORT
MS21920-20 CLAMP (OR -21/-22)
D5123-7 RUBBER CUSHION
2 PL

D350-748-243
BENT TUBE

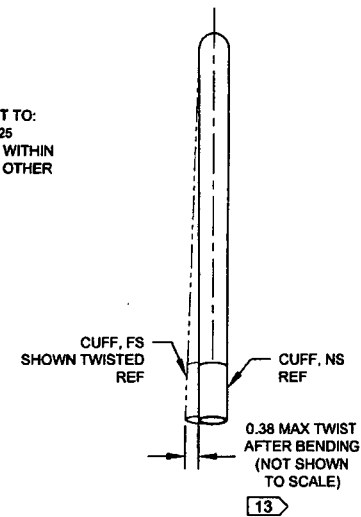
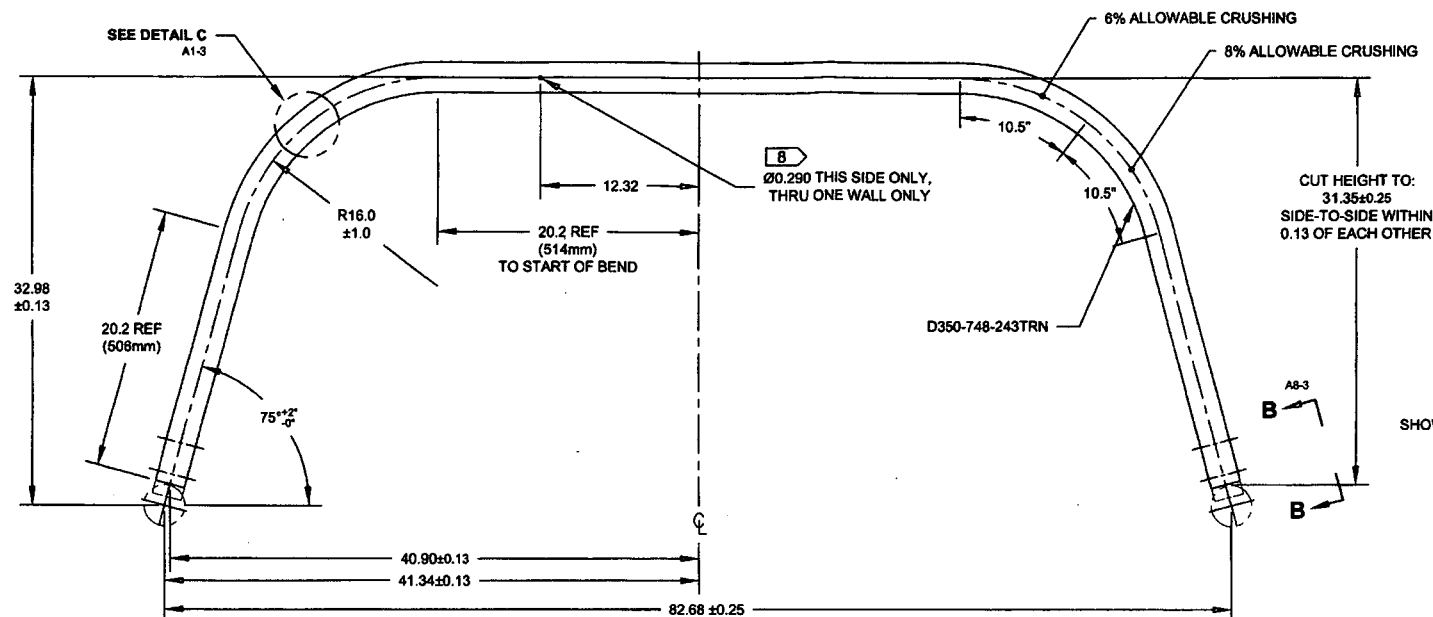
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UNDER REVIEW

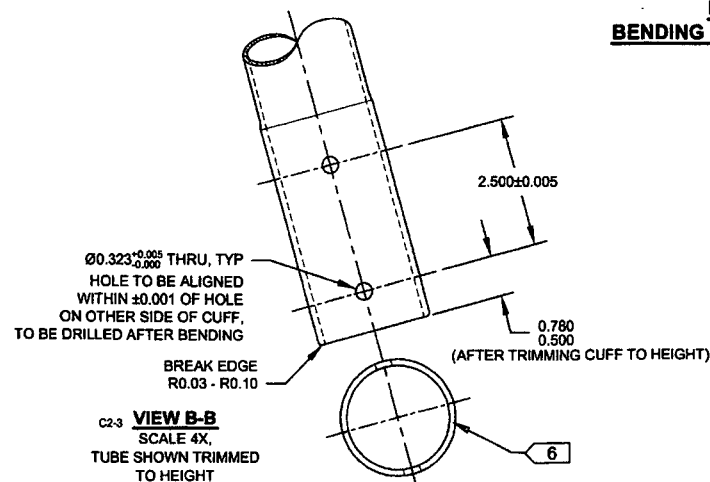
RELEASED

2015 MAR 18 47

DESIGN	90	DART AEROSPACE LTD	
DRAWN	90	HAWKESBURY, ONTARIO, CANADA	
CHECKED	A.P.	DRAWING NO.	REV. A
MFG. APPR.	7.04	D350-748-243	SHEET 2 OF 4
APPROVED	7.04	TITLE	SCALE
DE APPR.	7.04	CROSSTUBE (AS 350/355 HI AFT)	NTS
DATE	15.01.21	COPYRIGHT © 2015 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



D350-748-243
BENDING AND DRILLING DETAIL 11

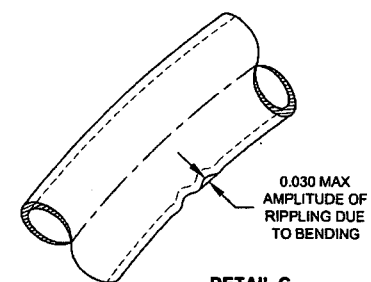


DEO ATTACHED
RELEASED

2015 MAR 18 up

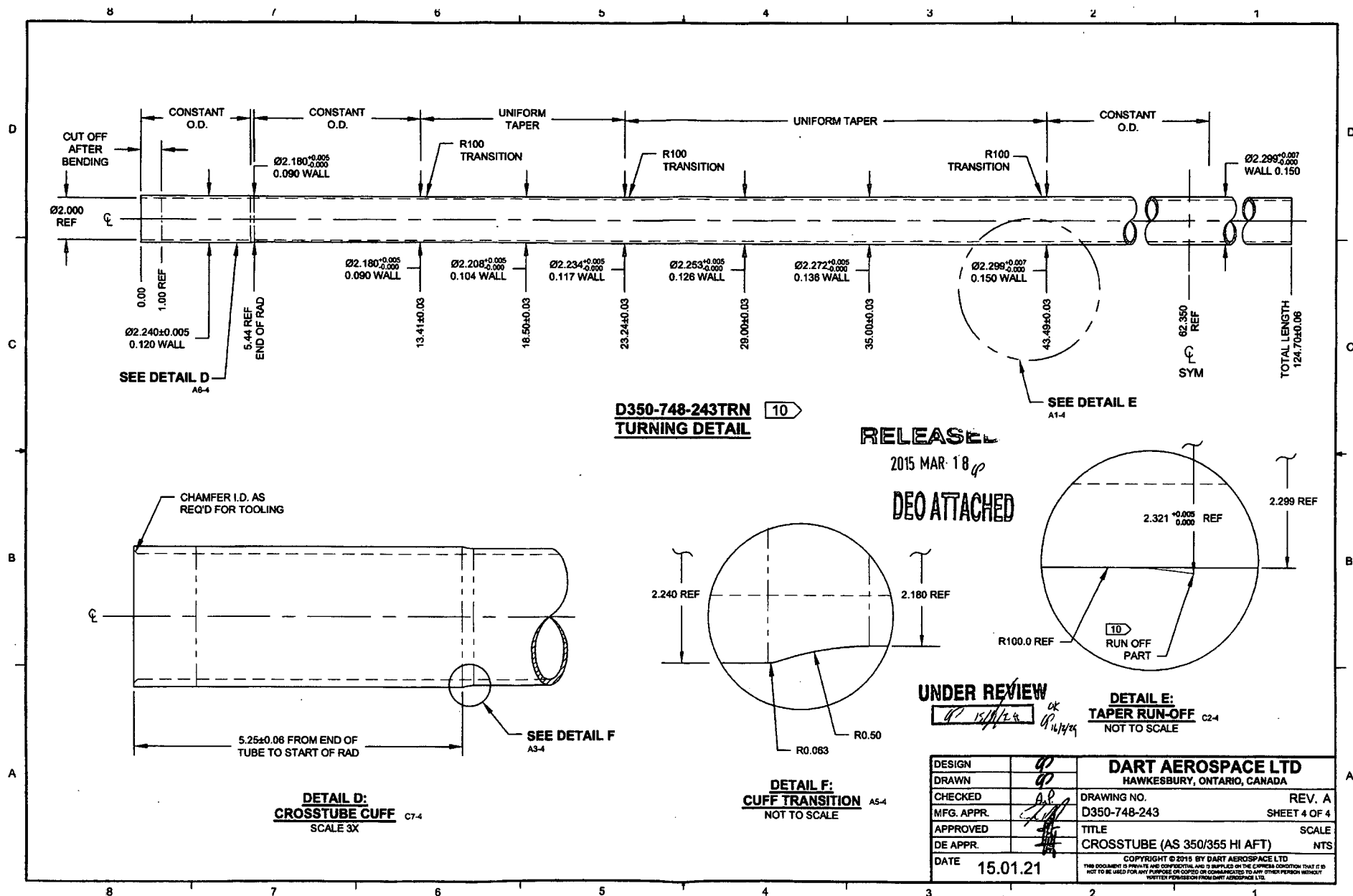
UNDER REVIEW

15/14/28 OK 9/6/28



DETAIL C D7-3
SCALE 4X
RIBBLING EXAGGERATED

DESIGN		DART AEROSPACE LTD
DRAWN		HAWKESBURY, ONTARIO, CANADA
CHECKED	A.P.	DRAWING NO. REV. A
MFG. APPR.		D350-748-243 SHEET 3 OF 4
APPROVED		TITLE SCALE
DE APPR.		CROSSTUBE (AS 350/355 HI AFT) NTS
DATE	15.01.21	COPYRIGHT © 2015 BY DART AEROSPACE LTD
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DRAWING NO. D350-748-243	TITLE CROSSTUBE	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D350-748-243-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>Q</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>[Signature]</i>		APPROVED <i>[Signature]</i>	DE APPR. <i>[Signature]</i>		
DATE 15.11.18	DATE 15.11.18	DATE 16.02.19	DATE FEB 19 2016	DATE 2016.02.19			

AMEND NOTE 2 (SHEET 1) AS FOLLOWS:

- 2) FINISH: PREPARE SURFACE PER DART QSI 005 4.1.4
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 PAINT OUTSIDE PER DART QSI 005 4.2
 OR
 POWDER COAT WHITE (4.3.5.2) PER DART QSI 005 4.3

RELEASED
 2016-02-26
 EN 16-534 *[Signature]*

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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO32321**

Purchase Order Date 5/10/2016

PO Print Date 5/12/2016

Page Number 4 of 5

Order From :
SKYSERVICE
6120 MIDFIELD ROAD
MISSISSAUGA, ONTARIO L5P 1B1
CANADA

VC-SKY001

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name
Vendor Phone 905-678-5636

Ship To Contact
Ship To Phone
Ship Via: Delivered
Ship Acct:

Buyer Chantal Lavoie
Customer POID
Customer Tax # 10127-2607
Terms Net 30
Currency CAD
FOB FCA - (Free Carrier)

						Line Total:	\$0.00
9	144467	D350-748-203 CROSSTUBE	5/12/2016 ✓	1.00		\$0.00	\$0.00
			Yes 5/12/2016				
LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2			C216105/12				
						Line Total:	\$0.00
10	144817	D3011-1 RAPPEL SLIDE BAR	5/12/2016	6.00		\$0.00	\$0.00
			Yes 5/12/2016				
LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2							
						Line Total:	\$0.00
11	144493	D4464-041 FUEL TANK	5/12/2016	1.00		\$0.00	\$0.00
			Yes 5/12/2016				
LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2							

Note:

5/12/2016

**skyservice****Work Order Traveler**
Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO28223	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: 32321
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT ON 8 CROSSTUBES, 1 FUEL TANK & 6 RAPPEL SLIDE BARS AS PER PO32321

1 FUEL TANK ASSY, ITEM ID# D4464-041, WORK ORDER ID# 144493

6 RAPPEL SLIDE BARS, ITEM ID# D3011-1, WORK ORDER ID# 144817

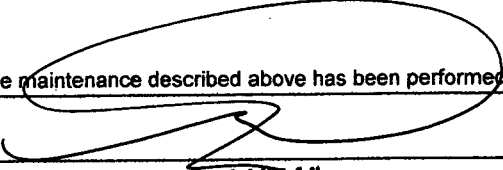
3 STAINLESS STEEL AFT CROSSTUBES, ITEM ID# D350-748-203, WORK ORDER ID# 144465, 144466, 144467

3 STAINLESS STEEL FWD CROSSTUBES, ITEM ID# D350-748-103, WORK ORDER ID# 144404, 144405, 144406

2 FWD CROSSTUBES, ITEM ID# D212-664-101, WORK ORDER ID# 145389, 145390

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-13 NO CRACK FOUND PEN. ZL-56, B#14M046, UV M-20141, CLEANER SKC-S #14H01K, DEV. 13M25K						MAY 11 2016	 
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature: 	ACA/SCA Stamp 	Date: MAY 11 2016
Name: RAFIK MELIKYAN		

Work Order ID 144467

144467

Page 1

April 19, 2016 9:20:12 AM

Item ID: D350-748-203

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 4/19/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/6/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Run Start

NR1

Approvals:

Process Plan:

SA

Date: 20160419

Tooling:

Date:

Stop

NR2

QC:

Date:

SPC (Y/N):

Date:

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D350-748-243	A								
100	Document Control	0.00							
100	DOCUMENT CONTROL								
DC	Memo	0.00							
Doc Control - JISB or Paperwork	Photocopy bluefile & type labels per PPPD350-748-201								
110	BENDING MACHINE - CROSSTUBES	0.00							
110		0.00							
CNC Bend 2	Memo								
CNC Alpha 160 Bender	Bend tube as per Dwg D350-748-243 using CNC bender program D350A and Folio FT								
	****UNDER BEND .225" PER SIDE*****								
	****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****								

MCS MAY 30 2016

16-04-14